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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,571

07/18/2006

Andrey Akaro

6475

7590

05/26/2009

Zborovsky I.  
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EXAMINER

ELLIS, RYAN H

ART UNIT

PAPER NUMBER

3745

MAIL DATE

DELIVERY MODE

05/26/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,571	<b>Applicant(s)</b> AKARO ET AL.	
	<b>Examiner</b> RYAN H. ELLIS	<b>Art Unit</b> 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/18/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

1. This is in response to applicant's amendments and response filed on March 23<sup>rd</sup>, 2009. Claims 4-6 are pending and claim 4 is amended and claims 5 and 6 are original.

#### ***Response to Arguments***

2. No signed oath was received with the amendment.

3. Applicant's arguments, see page 3 line 13, filed March 23<sup>rd</sup>, 2009, with respect to the 112 rejection has been fully considered and are persuasive. The rejection of claim 5 has been withdrawn.

4. Applicant's arguments with respect to claims 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

5. Applicant's arguments, with respect to claim 4, filed March 23<sup>rd</sup>, 2009 have been fully considered but they are not persuasive. The examiner disagrees with the applicant's statement that the blades of Kim are not uniform circumferentially because Figure 2 clearly shows blades spaced uniformly around the shaft. The examiner also disagrees with the applicant's statement that Seki does not teach that the blade is within the range of thickness of applicant's blade and that the thickest part is in the middle of the blade. The abstract of Seki teaches that the maximum thickness of the blades is between 20 to 25 percent of the chord length which is within the range of 10 to 25 percent set forth by the applicant. Seki also discloses that the blade center can be between 0 and 50 percent of the chord length which would teach that the maximum thickness of the blade could be in the middle of the chord.

***Oath/Declaration***

6. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the signatures of all the inventors are missing and is required for correction.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. In claim 4 applicant states that the blades have “sharp” edges but fails to give a definition or value to the limitation. The claim is therefore indefinite.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 4 and 5, as far as they are definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,379,113 B1 to Kim in view of PCT Publication No. WO03/040555 to Seki (refer to U.S. Patent No. 6,974,309 B2 for

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English translation), U.S. Patent No. 6,168,384 to Vanmoor and US Patent No. 6,533,536 to Fisher, Jr. et al. (Fisher).

In Reference to Claim 4

Kim teaches:

A propeller, comprising a shaft (drive shaft of engine 21); at least two hubs arranged on said shaft and blades (propellers 3) extending in a direction away from said shaft (Figures 1 and 2) and fixed on each of said hubs uniformly over a circumference (Figure 2).

Kim fails to teach:

Blades having sharp front and rear edges that have a thickness of  $(0.10-0.25)b$ , where  $b$  is chord length, and that are twisted relative to an axis extending through the middle of the blade, wherein said maximum thickness of said profile is located in the middle of each of said local chords.

Seki teaches:

Blades that have a thickness of  $(0.10-0.25)b$ , where  $b$  is chord length (col. 2, ll. 13-14), where the maximum thickness occurs in the middle of the blade chord (col. 5, ll. 66-67).

Vanmoor teaches:

Blades having sharp front and rear edges (col. 6, ll. 11-14).

Fisher teaches:

A blade twisted (col. 7, ll. 3-5 and Figure 7) relative to an axis extending through the middle of said local chords.

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the propeller thickness of Kim with the blade thickness of Seki for the purpose of increasing self starting performance (col. 2, ll. 33-37). It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the propellers of Kim with the sharp edges of Vanmoor, for the purpose of reducing drag. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to modify the blade of Kim with the twist of Fisher for the purpose of more efficient propulsion.

In Reference to Claim 5

Kim as modified by Seki, Vanmoor and Fisher teaches:

A propeller as defined in claim 4 (see rejection of claim 4 above), wherein said blades are fixed on each of said hubs inclinedly in a direction opposite to a direction of rotation (Figure 2). Kim's blades are swept backwards as shown in Figure 2.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,379,113 B1 to Kim in view of PCT Publication No. WO03/040555 to Seki (refer to U.S. Patent No. 6,974,309 B2 for English translation), U.S. Patent No. 6,168,384 to Vanmoor and US Patent No. 6,533,536 to Fisher, Jr. et al. (Fisher) and in further view of US Patent No. 5,551,841 to Kamada.

In Reference to Claim 6

Kim as modified by Seki, Vanmoor and Fisher teaches:

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A propeller as defined in claim 4, (see rejection of claim 4 above), and an immovable cylindrical casing (barrel, 'a') which surrounds all said blades (Figures 1 and 2).

Kim fails to teach:

The cylinder is moved out in front of said blades of a front hub not less than by length of said blade.

Kamada teaches:

The cylinder (casing 1) is moved out in front of said blades (fan 4) of a front hub not less than by length of said blade (Figure 4B). Figure 4B shows the casing is out in front of the fan by more than a blade length. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the casing of Kim with the extended casing of Kamada for the purpose of increasing efficiency of the blades and lowering noise (col. 1, ll. 35-41)

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN H. ELLIS whose telephone number is (571)270-7414. The examiner can normally be reached on Monday-Friday; 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ED LOOK can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RYAN H. ELLIS/  
Examiner, Art Unit 3745

/Edward K. Look/  
Supervisory Patent Examiner, Art Unit 3745